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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/672,220

09/26/2003

Hyun-Soo Kim

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2869

8791

7590

11/16/2004

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EXAMINER

STULTZ, JESSICA T


ART UNIT

PAPER NUMBER

2873

DATE MAILED: 11/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<p align="center">Office Action Summary</p>	Application No. 10/672,220	Applicant(s) KIM ET AL.	
	Examiner Jessica T Stultz	Art Unit 2873	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 October 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) 8 and 9 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>0903</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION***Drawings***

Figures 2A, 2B, 3, and 4 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.121(d)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Information Disclosure Statement

The information disclosure statement filed September 26, 2003 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each U.S. and foreign patent; each publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered. Specifically, a copy of the crossed-out reference has not been received by the office and therefore has not been considered. For applicant's information, the office did not receive a copy of the IEEE journal article Dulk et al, however, the examiner was able to retrieve a copy of the article and it was placed in the file.

Election/Restrictions

Applicant's election of claims 1-7 in the reply filed on October 5, 2004 is acknowledged. Because applicant did not distinctly and specifically point out the

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supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3 and 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu et al in view of Nobuhara.

Regarding claim 1, Shimizu et al discloses an optical signal processor (Column 5, line 46-Column 6, line 42, wherein the optical signal processor is the compression waveguide shown in Figures 1, 3, and 7), comprising: a saturable absorber area including a saturable absorber area (Column 5, line 46-Column 6, line 42, wherein the saturable absorber area is "2", Figures 1, 3, and 7) including a substrate, an active layer, a clad layer, and a first upper electrode (Column 5, line 46-Column 6, line 42 and Column 10, lines 24-56, wherein the substrate is "9", the active layer is "3", the clad layer is "5", and the first upper electrode is "8", Figures 1, 3, and 7), which are sequentially formed on one face of the substrate (Figures 1, 3, and 7), and a first lower electrode formed on the other face to the substrate (Column 5, line 46-Column 6, line 42 and Column 10, lines 24-56, wherein the first lower electrode is "7", Figures 1, 3, and 7); and a gain-clamped optical amplifier area (Column 5, line 46-Column 6, line 42 and Column 10, lines 24-56, wherein the gain-clamped optical amplifier area is gain region "1", Figures 1, 3, and 7) including a substrate, an active layer, a clad layer, and a second upper electrode (Column

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5, line 46-Column 6, line 42 and Column 10, lines 24-56, wherein the substrate is "9", the active layer is "3", the clad layer is "5", and the second upper electrode is "8", Figures 1, 3, and 7) which are sequentially formed on one face of the substrate (Figures 1, 3, and 7), and a second lower electrode formed on the other face of the substrate (Column 5, line 46-Column 6, line 42 and Column 10, lines 24-56, wherein the second lower electrode is "7", Figures 1, 3, and 7), the second upper electrode being isolated from the first upper electrode of the saturable absorber area (Shown in Figures 1, 3, and 7, wherein there is a space between the upper electrodes of the gain region "1" and the saturable absorber region "2"), wherein the device has a diffraction grating (Column 12, lines 33-59, wherein the grating is Bragg reflector "13", Figure 7), but does not specifically disclose that the substrate of the gain-clamped optical amplifier region has a diffraction grating for generating a laser beam. Nobuhara teaches of an optical amplifier including a substrate having a diffraction grating for generating a laser beam (Column 7, line 41-Column 8, line 24, wherein the optical amplifier includes substrate "18" and diffraction grating "20", Figure 7), an active layer, a clad layer, and an upper electrode (Column 7, line 41-Column 8, line 24, wherein the active layer is "11", the clad layer is "13" and the upper electrode is "15", Figure 7), which are sequentially formed on one face of the substrate (Shown in Figure 7), and a lower electrode on the other face of the substrate (Column 7, line 41-Column 8, line 24, wherein the lower electrode is "14", Figure 7), wherein the diffraction grating is included in the substrate for the purpose of providing a laser beam to be amplified of the required wavelength by changing the corrugation pitch of the grating (Column 4, lines 52-59). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made for the signal processor of

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Shimizu et al to further include the substrate of the optical amplifier to have a diffraction grating for generating a laser beam since Nobuhara teaches of an optical amplifier including a substrate having a diffraction grating for generating a laser beam, an active layer, a clad layer, and an upper electrode, which are sequentially formed on one face of the substrate, and a lower electrode on the other face of the substrate, wherein the diffraction grating is included in the substrate for the purpose of providing a laser beam to be amplified of the required wavelength by changing the corrugation pitch of the grating.

Regarding claim 2, Shimizu et al and Nobuhara disclose and teach of an optical signal processor as shown above and it is further inherent from Shimizu et al that an ohmic contact layer is formed between the clad layer and the upper electrodes in both the saturable absorber and the gain-clamped area, this being reasonably based upon the electrodes being disclosed as ohmic electrodes (Column 10, line 57-Column 11, line 27, wherein the electrodes "8" are ohmic and therefore have an ohmic contact layer, Figures 1, 3, and 7).

Regarding claim 3, Shimizu et al and Nobuhara disclose and teach of an optical signal processor as shown above and Shimizu et al further discloses that the saturable absorber and the gain-clamped amplifier area are formed on one substrate, and the first and second upper electrodes are isolated from each other according to an etched groove (Shown in Figures 1, 3, and 7, wherein the saturable absorber areas "2" and the amplifier areas "1" have electrodes "8" separated by etched grooves).

Regarding claims 5-6, Shimizu et al and Nobuhara disclose and teach of an optical signal processor as shown above and Nobuhara further discloses that the period of

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the diffraction grating is varied to control the wavelength of the laser beam generated by the diffraction grating (Column 4, lines 52-59, wherein the corrugation pitch of the grating is changed to provide a laser beam of the desired wavelength) and that the wavelength of the laser beam is included in the gain bandwidth of the active layer but is not included in an amplification bandwidth of the gain-clamped optical amplifier area (Column 4, line 52-Column 5, line 4).

Regarding claim 7, Shimizu et al and Nobuhara disclose and teach of an optical signal processor as shown above and Nobuhara further teaches that the substrate is n-type InP (Column 7, lines 41-45, wherein the substrate is "18", Figure 7), the active layer is InGaAsP (Column 7, lines 56-65, wherein the active layer is "11", Figure 7), and the clad layer is InP (Column 7, lines 66-68, wherein the clad layer is "13", Figure 7).

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu et al in view of Nobuhara and further in view of Suzuki et al.

Regarding claim 4, Shimizu et al and Nobuhara disclose and teach of an optical signal processor as shown above, but do not specifically disclose that the facets of the device are shielded with an anti-reflection thin film. Suzuki et al teaches of a device including an optical amplifier area wherein the facets of the device are shielded with an anti-reflection thin film (Column 31, line 65-Column 32, line 22, wherein the laser amplifier has anti-reflection film "313" on the facets) for the purpose of suppressing the reflectivity of the facets and to protect against multiple reflections of light (Column 31, line 65-Column 32, line 22 and Column 39, lines 13-23). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made for the optical signal processor of Shimizu et al and Nobuhara to have facets of the device

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shielded with an anti-reflection thin film since Suzuki et al teaches of a device including an optical amplifier area wherein the facets of the device are shielded with an anti-reflection thin film for the purpose of suppressing the reflectivity of the facets and to protect against multiple reflections of light.

Conclusion

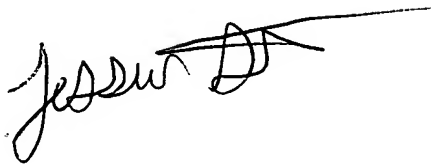
The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Tanaka et al and Andrews are cited because they both disclose some similar structure to the claimed invention. Andrews discloses a signal processor with a saturable absorption area and an optical amplifying section and Tanaka et al discloses an optical signal processor with a laser amplifier including a diffraction grating.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jessica T Stultz whose telephone number is (571) 272-2339. The examiner can normally be reached on M-F 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on 571-272-2328. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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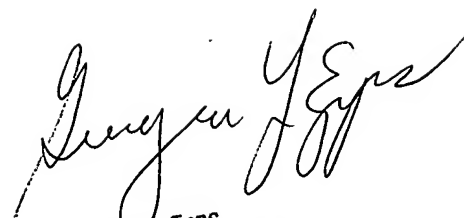
A handwritten signature in black ink, appearing to read "Jessica Stultz", with a long horizontal line extending from the end of the signature.

Jessica Stultz

Patent Examiner

AU 2873

November 10, 2004

A handwritten signature in black ink, appearing to read "Georgia Epps", written in a cursive style.

Georgia Epps
Supervisory Patent Examiner
Technology Center 2800